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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,430	03/29/2002	Tetsujiro Kondo	450108-03399	6919
20999 7590 07/20/2007 FROMMER LAWRENCE & HAUG 745 FIFTH AVENUE- 10TH FL. NEW YORK, NY 10151			EXAMINER HAN, QI	
			ART UNIT 2626	PAPER NUMBER
			MAIL DATE 07/20/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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**Office Action Summary**

Application No.

10/089,430

Applicant(s)

KONDO ET AL.

Examiner

Qi Han

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 April 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4,5,7,8,10,11,13,14,16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7,8,10,11,13,14,16 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### *Response to Amendment*

2. This communication is responsive to the applicant's amendment dated 04/26/2007. The applicant(s) amended claims 1, 4, 7-8, 10-11, 13-14 and 16-17 (see the amendment: pages 4-10).

The examiner withdraws the claim rejection under 35 USC 101, because the applicant amended the claim.

#### *Response to Arguments*

3. Applicant's arguments filed on 04/26/2007 with respect to the claim rejection under 35 USC 102/103, have been fully considered but are moot in view of the new ground(s) of rejection, since the amended claims introduce new issue and/or change the scope of the claims. It is also noted that, the previous cited references are still applicable to the amended claims for the prior art rejection (see below).

In response to applicant's arguments (Remark in the amendment: page 13) regarding newly amended claim 1 (also for claims 4, 7, 10, 13 and 16) that "neither Imai or Thyssen, taken alone or in combination, discloser or suggest a first step of calculating self correlation coefficients uses fewer samples than a second step of calculating self correlation coefficients, as recited in claim 1" (see Remark in the amendment: page 13, paragraph 4), the examiner

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respectfully disagrees the applicant's arguments and have a different view of the prior art teachings and the claim interpretations. It is noted that Imai discloses 'auto-correlation analysis is performed using a plurality of window widths' and 'the block length' is 'over a wide range of **from approximately 1.25 ms to approximate 28.0 ms**' (col. 7, line 62 to col. 8, line 15), wherein the auto-correlation analysis for the shorter time of 1.25ms corresponds to claimed "a first step of calculating self correlation coefficients uses fewer samples" and the auto-correlation analysis for the longer time of 28.0ms corresponds to claimed "a second step of calculating self correlation coefficients", because for a fixed the sample rate a short time window inherently includes fewer samples than that of longer time window. Therefore, based on broadest reasonable interpretation of the claim, the Imai's disclosure is properly read on the claimed limitation (also see new claim rejection below).

4. In response to applicant's arguments regarding the introduced new matter for the amended equation 4 in the amendment (filed on 04/05/2006), that "applicants respectfully submit that the equation is corrected due to typographical error and is not new matter" (see the amendment: page 11, last paragraph to page 12, paragraph 3), the examiner disagrees with applicant's arguments because the original specification disclosure, the records of applicant's statements in the previous amendments, and the common knowledge in the art. It should be pointed out that the applicant lacks consistent position regarding this amendment showing the amendment being material change of the disclosed content in the specification. It is noted that at first time, applicant clearly stated "a simple trigonometric transform will transform Equation 4 into the well-known Hamming function definition" (see the amendment filed on 04/05/2006:

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page 14, last paragraph). When the examiner questioned the statement regarding the transforming the two equations, the applicant intentionally avoided providing the direct proof, instead, only providing evidences of well-know Hamming window equation itself and the applicant's original equation itself (see the amendment filed on 08/28/2006: page 12). After another round of objection, the applicant still failed to provide evidence to prove his previous statement; instead, the applicant excused with "typographical errors" (see the amendment filed on 04/26/2007: page 11, last paragraph). At the same time, the applicant continued to point to a website content for supporting his original equation 4, which directly conflicts with his typographical error excuse. Based on the facts that: i) the amended equation 4 is mathematically different from the original equation (see specification: page 12); ii) it is not well known to one skilled in the art to prove that the original and amended equations can be transformed from one to the other; iii) applicants failed to specifically prove their won statement being true; and/or, iv) the records shows applicant's inconsistent positions regarding this issue (as stated above), the examiner believes the amended equation is new subject matter and the applicant's arguments are not persuasive. Therefore, the objection is sustained.

### ***Specification and Drawing***

5. The previous amendment filed 04/05/2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Regarding Equation 4, according to the statement that “applicants respectfully submit that a simple trigonometric transform will transform Equation 4 into the well-known Hamming function definition” (see the amendment filed on 04/05/2006: page 14, last paragraph), the amended equation 4 (see the amendment: page 4) introduces new subject matter, because i) the amended equation 4 is mathematically different from the original equation (see specification: page 12); ii) it is not well known to one skilled in the art to prove that the old and new equations can be transformed from one to the other; and/or iii) applicants failed to specifically prove their own statement regarding the transforming issue (see above). It is noted that the arguments in both amendments filed on 08/28/2006 and 04/26/2007 failed to prove that the original equation 4 and the amended equation (filed on 08/28/2006) could be transformed from one to the other. It is also noted that the first website provided by applicant (see in the amendment filed on 04/26/2007, page 12) only shows the Hamming window function itself, but not a proof of the two equations being transformed from each other, as stated by the applicant; and the second website only shows the same equation as the applicant’s original equation, which does not provide any evidence/basis for amending the equation 4 at all. Further, the applicant is reminded that it is applicant’s responsibility to prove the two equations can be transformed each other (not the examiner’s responsibility), but the applicant failed to do so. Applicant is required to cancel the new matter in the reply to this Office Action, or to provide appropriate evidence to prove the issue iii above, or file a CIP application.

6. The disclosure is objected to because of the following:

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The amended terms “the data value[level] of each class tap” (see the amendment filed 08/28/2006: on page 3, paragraph 2) lacks clear meaning. Appropriate correction or explanation is required. The applicant failed to response to the issue in the previous amendment(s).

***Claim Rejections - 35 USC § 112***

7. Claims 1, 4 and 7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1, 4 and 7, even though the newly amended claims partially delete the limitation “step of selecting...”, the remained limitation “by the selected prediction method...” still contains new subject matter, because this limitation is not supported by the original specification.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 4 and 7, they recite the limitation “**the** selected prediction method”. There is insufficient antecedent basis for this limitation in the corresponding claims.

*Claim Rejections - 35 USC § 103*

9. Claims 1-2, 4-5, 7-8, 10-11, 13-14 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over IMAI et al. (US 6,360,198 B1) hereinafter referenced as IMAI in view of THYSSEN (US 2002/0138256 A1).

As per **claim 1**, as best understood in view of the claim rejection under 35 USC 112 1<sup>st</sup> and 2<sup>nd</sup> (see above), IMAI discloses ‘audio processing method, audio processing apparatus, and recording reproduction apparatus cable of outputting voice having regular pitch regardless of reproduction speed’ (title), comprising:

“a step of cutting parts out of the digital audio signal by plural windows having different sizes” (col. 2, lines 20-26, ‘after having performed digital signal processing on the audio data’; col. 7, lines 22-26, ‘performing (calculating) auto-correlation (self correlation) analysis (necessary including the correlation coefficients) for each of the voiced sound, unvoiced sound, and silent...’; col. 7, line 62 to col. 8, line 15, ‘auto-correlation analysis is performed using a plurality of window widths (corresponding to plural windows having different sizes) having different values’);

“a plurality of steps of calculating self correlation coefficients, based on each of the cut-out parts of the digital audio signal” (col. 7, line 62 to col. 8, line 15, ‘auto-correlation analysis is performed using a plurality of window widths’, so as to calculate multiple auto-correlation coefficients (in each of steps) for each of the corresponding plural windows);

“a step of classifying the parts into a class based on the calculation results of the self correlation coefficients”, (col. 7, lines 20-26, ‘classifying the resulting data into voiced sound,



unvoiced sound, and silent...processing of performing auto-correlation (self correlation) analysis for each of the voiced sound, unvoiced sound, and silent'; Fig. 1);

"a step of generating a new digital audio signal which is obtained by the digital audio signal", (col. 8, lines 37-38 and Fig. 1, 'supplies (generates) the thus-read-out data (new digital audio signal) to the audio data connection part'),

"wherein a first step of calculating self correlation coefficients uses fewer samples than a second step of calculating self correlation coefficients" (col. 7, line 62 to col. 8, line 15, 'auto-correlation analysis is performed using a plurality of window widths' and 'the block length' is 'over a wide range of from approximately 1.25 ms (read on claimed "calculating self correlation coefficients uses fewer samples", since the sample rate is fixed) to approximate 28.0 ms').

It is note that IMAI does not expressly disclose generating the new digital signal "by prediction-operating the digital audio signal by the prediction method corresponding to the obtained class". However, the feature is well known in the art as evidenced by THYSSEN who discloses 'low complexity random codebook structure' (title), comprising 'classifies noise, unvoiced speech, and voiced speech so that an appropriate modeling scheme (prediction method) corresponding to particular classification can be selected' (paragraph 32), using 'linear prediction analysis' (paragraph 32) and 'linear prediction (LP) parameters' (paragraph 60), including 'LSF coefficients' and 'LTP (long-term prediction)' for 'prediction of the pitch lag' with different methods based on classified input speech (paragraphs 86-138), and teaches that 'efficient signal representations can be determined by estimating and applying certain prediction parameters to represent the signal (prediction-operating the digital signal)' (paragraph 4). Therefore, it would

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have been obvious to one of ordinary skill in the art at the time the invention was made to modify IMAI by providing different calculations (methods or operations) for different predictive parameters corresponding to classification to represent (generating) the signal, as taught by THYSSEN, for the purpose (motivation) of modeling a signal value according to an earlier value and/or providing more perceptually accurate reproduction of the noise signal (THYSSEN: paragraphs 4 and 9).

As per **claim 2** (depending on claim 1), IMAI in view of THYSSEN further discloses “at least a general searching range and a local searching range are provided as targets for calculating the self correlation coefficients with respect to the digital audio signal, and the self correlation coefficients are calculated based on the searching ranges”, (THYSSEN: paragraph 82, ‘the autocorrelations of the windowed speech are computed’; ‘paragraphs 115-139, ‘estimation of the precise pitch lag... based on the normalized correlation (self correlation)’, ‘the size L is defined according to open-loop pitch lag  $T_{op}$  with the corresponding normalized correlation’, and ‘one integer k is maximizing the  $R_k$  (the normalized correlation) in the range  $[T_{op} - 10, T_{op} + 10]$  (local range) bounded by [17-145] (general range)’ and other related ranges; paragraphs 143-160, ‘local integer shifting range [SR0, SR1] (local range, herein the range  $[T_{op} - 10, T_{op} + 10]$  is referred as global range) for searching’).

Regarding **claims 4-5**, they recite a digital audio signal processing device (apparatus). As best understood in view of the claim rejection under 35 USC 112 1<sup>st</sup> and 2<sup>nd</sup> (see above), the rejection is based on the same reason described for claims 1-2 respectively, because the claims recite the same or similar limitations as method claims 1-2 respectively.

Regarding **claims 7-8**, they recite a computer-readable medium. As best understood in view of the claim rejection under 35 USC 112 1<sup>st</sup> and 2<sup>nd</sup> (see above), the rejection is based on the same reason described for claims 1-2 respectively, because the claims recite the same or similar limitations as method claims 1-2 respectively.

As per **claim 10**, the rejection for claimed elements 2-5 is based on the same reason used for claim 1, because it also reads on the corresponding limitations of claim 10. In addition, IMAI in view of THYSEN further discloses:

“a step of generating, from a desired digital audio signal, a student digital audio signal in which the digital audio signal is degraded”, (IMAI: col. 2, lines 443-44, ‘thinning of the audio data’; col. 7, ‘decimation processing of decreasing the sampling rate of the audio data’, which inherently causes the audio signal (data) degraded, as claimed).

“a step of storing the prediction coefficient associated with each class” (THYSEN: Fig. 2 and paragraph 67, ‘adaptive codebook 257’ and ‘fixed codebook 261’ and ‘speech classifier’ in block 279’, ‘parameters from (prediction coefficient stored in) the adaptive and fixed codebooks 257 and 261’; paragraphs 210 and 222, ‘the LTP parameter (or the adaptive codebook parameters) are the pitch lag’, ‘a speech classifier is used to direct the searching procedure of the fixed codebook’; in addition, it is well known in the art that the codebook structures necessarily include the indexes (corresponding to classes) and parameters (corresponding to prediction coefficients)).

Regarding **claim 11** (depending on claim 10), the rejection is based on the same reason described for claim 2, because the claim recites the same or similar limitations as claim 2.

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Regarding **claims 13-14**, they recite a learning device (apparatus). The rejection is based on the same reason described for claims 10-11 respectively, because the claims recite the same or similar limitations as method claims 10-11 respectively.

Regarding **claims 16-17**, they recite a computer-readable medium. The rejection is based on the same reason described for claims 10-11 respectively, because the claims recite the same or similar limitations as method claims 10-11 respectively.

### *Conclusion*

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Please address mail to be delivered by the United States Postal Service (USPS) as follows:

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Effective January 14, 2005, except correspondence for Maintenance Fee payments, Deposit Account Replenishments (see 1.25(c)(4)), and Licensing and Review (see 37 CFR 5.1(c) and 5.2(c)), please address correspondence to be delivered by other delivery services (Federal Express (Fed Ex), UPS, DHL, Laser, Action, Purolater, etc.) as follows:

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (571) 272-7604. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richmond Dorvil, can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: [ebc@uspto.gov](mailto:ebc@uspto.gov). For general information about the PAIR system, see <http://pair-direct.uspto.gov>.

QH/qh  
July 14, 2007

  
RICHMOND DORVIL  
SUPERVISORY PATENT EXAMINER